

tioned belonged to the Homrai, or Great Hornbill, with the flat casque, curved upwards anteriorly, that bird should stand as the *B. bicornis*, Linn., of which name *B. cavatus*, Shaw, is a synonym. The descriptions given by Brisson and Linnæus of the plumage of the *body*, not answering to any known species, cannot receive any consideration in connexion with *B. bicornis*. That of Linnæus applies best to *Buceros* (*Anthracoceros*) *malabaricus* of Gmelin; but the description of the casque shows that this species was not intended.

XXXVII.—*Notes on a 'Catalogue of the Accipitres in the British Museum,' by R. Bowdler Sharpe (1874). By J. H. GURNEY.*

[Continued from p. 333.]

IN my last paper I alluded (*anteà*, p. 332) to the occurrence of *Aquila clanga* in Spain. Since then the Norwich Museum has been enriched by the gift, from Lieut.-Col. L. H. Irby, of an adult male of that species, killed near Seville on the 11th February last, which I take this opportunity of recording*.

The typical Eagles (those of the genera *Uroaëtus* and *Aquila*) to which I am disposed to limit the term "Aquilinæ," pass by an almost imperceptible gradation into the next group, the Hawk-Eagles, for which the designation of "Thrasaëtinaë," suggested by the late Mr. Blyth†, may, I think, be conveniently adopted.

The Hawk-Eagles are all, more or less, distinguished from the typical Aquilinæ, as above restricted, by one or more of the following peculiarities, all of which seem to me to be indicative of Asturine affinities, viz. wings proportionally shorter, tail relatively longer, very large and generally much

* Col. Irby informs me that another Seville specimen of *A. clanga*, a nearly adult bird, is in the collection of Lord Lilford.

† *Vide* 'Catalogue of the Birds in the Museum of the Asiatic Society,' p. 24.

curved inner and hinder claws, culmen comparatively shorter and more rounded, also, in many species, an occipital crest, and, in many, yellow irides.

In the large majority of Hawk-Eagles the tarsi are feathered; but in a few instances, to which I shall have occasion subsequently to refer, they are bare of feathers and are scutellated.

Those of the Hawk-Eagles which differ least from the typical *Aquilinæ* are comprised in the genus *Nisaëtus*; but this genus is composed of three very distinguishable minor sections, of which I should arrange as the first the Dwarf Eagles *N. pennatus* and *N. morphnoides*—two species which form the subgenus *Hieraëtus* of Kaup, and which, perhaps, might properly be kept distinct under that designation; secondly, *N. fasciatus* (the type of the genus *Nisaëtus*) and *N. spilogaster*; and, thirdly, *N. bellicosus*, which is placed by Mr. Sharpe amongst the *Spizaëti*, but which (following the examples of Blyth* and Jerdon†) I refer to the genus *Nisaëtus*, considering it decidedly too long in the wing to be appropriately arranged among the more short-winged of the Hawk-Eagles, in which company it appears in Mr. Sharpe's volume.

Subsequently to the publication of Mr. Sharpe's work, very full accounts of *Nisaëtus pennatus* have appeared in Mr. Dresser's 'Birds of Europe,' and also in M. Bureau's interesting brochure, which has already been noticed in 'The Ibis' (*anteà*, p. 245); and I have nothing to add to the information there supplied, except to record that the Norwich Museum possesses a specimen from Moulmein, which is a more eastern locality than any recorded either by Mr. Sharpe or by Mr. Dresser.

To Mr. Sharpe ornithologists are indebted for pointing out an excellent criterion for distinguishing this Eagle from its nearly allied Australian congener, *N. morphnoides*, in the fact that in the latter, and not in the former, the under surface

* *Vide* 'Journal of the Asiatic Society,' vol. xiv. p. 174.

† *Vide* 'Birds of India,' vol. i. p. 67 (note).

of the primaries is conspicuously "barred throughout with greyish buff"*.

The localities quoted by Mr. Sharpe for *N. morphnoides* are South Australia and Queensland, to which West Australia should be added, as the Norwich Museum contains an example from the Swan River, and as others from King George's Sound are recorded at page 29 of Mr. Ramsay's 'Catalogue of Australian Accipitres,' where some interesting information will also be found relating to the variations of plumage incident to this species, which may be compared with Mr. Sharpe's additional observations on the same subject in the P. Z. S. 1875, p. 338.

Nisaëtus fasciatus, like *N. pennatus*, has, subsequently to the issue of Mr. Sharpe's volume, been the subject of an article in Mr. Dresser's 'Birds of Europe': much valuable and detailed information respecting the geographical distribution of this Eagle is contained in this article; but by some oversight the author erroneously cites Damara Land as a locality for this species, and quotes, as applying to it, the late Mr. Andersson's remarks on its more southern congener, *N. spilogaster*†.

In reality there is, so far as I am aware, no trustworthy record of the occurrence of *N. fasciatus* in South Africa; and with regard to its occurrence at Biballa and Huilla, in the Portuguese possessions in South-Western Africa, recorded in the 'Journal für Ornithologie' for 1876, p. 308, it seems probable, as suggested by Mr. Sharpe at page 38 of his edition of Layard's 'Birds of South Africa,' that an error of identification may have occurred, and a further investigation may show that *N. spilogaster* has been mistaken for *N. fasciatus*—a mistake which, as I have already pointed out at p. 138 of 'The Ibis' for 1868, may readily arise from the resemblance

* In Mr. Dresser's article on *N. pennatus*, he speaks of the "under surface of the wings being mottled" in *N. morphnoides*; but, judging from the specimens I have examined, I should say that the word "barred" describes the peculiarity more accurately than "mottled."

† *Vide* 'Notes on the Birds of Damara Land,' pp. 7 & 8, where the original error on this point, which arose from a mistake of my own, will be found corrected; Mr. Dresser, no doubt, quoted from the first edition of Mr. Layard's 'Birds of South Africa,' p. 11.

between the females of *N. spilogaster* and the males of *N. fasciatus*, in size as well as in general coloration.

There is, however, a variation in the markings of the under surface in specimens of *N. spilogaster*, to which I am desirous of briefly alluding. Two distinct phases of such markings occur in adult specimens, or at least in specimens which are so far adult as to have passed beyond the stage of plumage which characterizes this Eagle in its first year; and one of these phases is much more analogous to the character of the lower portions of the plumage in *N. fasciatus* than the other. Thus, in some individuals the white of the underparts is merely interspersed with sparse and narrow dark shaft-marks, slightly more conspicuous than the corresponding markings in *N. fasciatus*, but otherwise of a similar character, whilst in other specimens the dark markings on the under surface are much more numerous and also very much broader.

Whether this difference is due to sex or to disparity of age I am unable to say: the Norwich Museum possesses two nearly adult females of the former type from the Zambesi, and two adult males of the latter, one from the Zambesi and the other from Natal; on the other hand, the specimen figured on pl. 1 of Müller's 'Oiseaux d'Afrique,' which is there stated to be a male, is represented in the less conspicuously variegated plumage, resembling that of the two females preserved at Norwich.

As Mr. Sharpe states that this species is an inhabitant of "North-eastern Africa," it may be well to add that, so far as I am aware, it has never been obtained to the north of the 20th degree of north latitude.

With reference to the remaining species of this genus, *N. bellicosus*, I may remark that the darker portions of the plumage in the adult bird appear somewhat liable to fade; and Mr. Sharpe's description seems to me to have been taken from a partially faded specimen. In a very fine adult example in perfect plumage, which I examined last year in the Zoological Gardens at Antwerp, all the darker portions of the plumage were slaty black, with the feathers of the upper

parts, except the head and neck, broadly barred transversely with grey, those of the mantle also showing dark shaft-marks and being narrowly tipped with white.

I may further observe that Mr. Sharpe's note as to the habitat of this Eagle implies that it is restricted to South Africa, which is not the case: on the western side of that continent it has been obtained as far north as Bissao, specimens from that locality being preserved in the Museums at Leyden* and Norwich; whilst to the east it has certainly occurred as far north as Zanzibar†, and probably in Abyssinia and on the White Nile‡.

From the genus *Nisaëtus* we may naturally pass to the consideration of the more typical Hawk-Eagles; but before doing so it will be convenient to refer to three aberrant genera, *Spiziastur*, *Lophoaëtus*, and *Neopus*, each consisting of but a single species.

Spiziastur melanoleucus, a native of tropical America, is remarkable for the extraordinary development of its inner and hind claws, which are the most powerful, in proportion to the size of the bird, of those of any species of this group; but for this peculiarity it might very well be included in the genus *Nisaëtus*, which it resembles in the circumstance of its wings being proportionally longer than those of the more typical Hawk-Eagles, and also in the very slight development of its occipital crest; in common with the majority of the Hawk-Eagles it possesses the Asturine yellow iris§.

Lophoaëtus occipitalis is an African form, and remarkable for the extraordinary development of the occipital crest, which is greater, in proportion to the size of the bird, in this than

* *Vide* 'Muséum des Pays-Bas,' Accipitres, p. 59.

† *Vide* Finsch and Hartlaub's 'Vögel Ost-Afrika's,' p. 47.

‡ *Vide* Von Heuglin's 'Systematische Uebersicht,' p. 7, and 'Ornithologie Nordost-Afrika's,' p. 59; it seems, however, not impossible that the species referred to, doubtfully, by Von Heuglin may have been *Spizaëtus coronatus*.

§ My authority for the colour of the iris is a memorandum attached to a specimen obtained in Guatemala by Mr. Skinner, and preserved in the Norwich Museum.

in any other Hawk-Eagle: it also has a very bright yellow iris; but in other respects its Asturine affinities appear to be but slight, its wings being proportionally more elongated than in the typical members of the group, and its bill and talons being comparatively feeble.

Mr. Sharpe describes this species as having for its "range the whole of Africa," which is not quite accurate. I believe that Drs. Finsch and Hartlaub are correct in stating, at p. 51 of the 'Vögel Ost-Afrikas,' that its northward range does not extend beyond the 16th degree of north latitude. Mr. Sharpe also omits to mention that this species is found in Madagascar, a circumstance which appears to be satisfactorily established*.

The third, and perhaps the most remarkable, of these three aberrant forms is the oriental *Neopus malayensis*, a species which is Aquiline in the form of its bill, in the length of its wings, and in the dark colour of the iris, but which is allied to the Hawk-Eagles by its largely developed tail, and in a still greater and (if the phrase may be permitted) in an exaggerated degree by its powerful inner toe with an enormous claw, which, together, are more than twice the length of the outer toe and claw, the latter being comparatively diminutive. The claws in this species are proportionally longer and less curved than those of any other Hawk-Eagle; and their comparatively slender shape probably renders them somewhat less powerful than would otherwise be the case.

Mr. Sharpe amalgamates the genera *Spizaëtus* and *Limnaëtus*; but I think it better to separate the shorter-winged species, *S. ornatus*†, *S. tyrannus*, and *S. coronatus*, under the title of *Spizaëtus*, of which genus *S. ornatus* is the type, and to allow the remaining species included by Mr. Sharpe

* *Vide* Hartlaub's 'Ornithologischer Beitrag sur Fauna Madagascars,' p. 16, and 'Vögel Madagascars,' p. 4.

† Mr. Sharpe substitutes for the specific name of "*ornatus*," commonly in use, that of "*mauduyti*"—which I consider undesirable, as the two names were published simultaneously, and as the description given under the head of "*ornatus*" is the clearer of the two, being evidently taken from a more adult example.

in that genus to stand under the generic name of *Limnaëtus*, of which *L. caligatus* is the type, and under which I would also include *L. kieneri* and *L. isidori*, which Mr. Sharpe has separated under the generic name of *Lophotriorchis*, but, as I venture to think, on somewhat insufficient grounds.

I propose to refer first to the genus *Limnaëtus*, and subsequently to *Spizaëtus*.

In the 'Proceedings' of the Zoological Society for 1860, p. 342, my late friend, Mr. G. R. Gray, described and figured, under the name of *Aquila gurneyi*, a very fine Eagle, which was first obtained by Mr. Wallace in Batchian, but which also occurs in several other islands of the eastern ocean, as enumerated in Mr. Sharpe's volume. Mr. Sharpe includes this species in the genus *Spizaëtus*; I am, myself, disposed to agree in this view so far as to consider it a somewhat abnormal species of that portion of Mr. Sharpe's genus *Spizaëtus*, for which I would use the more restricted title of *Limnaëtus*. I think, however, that there is a considerable degree of truth in the remark made by Mr. Gray in his original description of this species, that "this fine bird partakes of the form of *Aquila malayensis*;" and it is for this reason that I allude to it as next in order to that species, which it recalls by its very large (though more curved) inner claw, by its somewhat elongated bill and wings, and by its largely developed and narrowly barred tail; the iris, however, is of a different character, being stated by Mr. Wallace to be "yellow-olive"*.

Limnaëtus gurneyi appears to be always destitute of a crest, in which respect it resembles another and much more typical species, *Limnaëtus lanceolatus*, of Celebes, respecting which I have nothing to add to the notice contained in Mr. Sharpe's volume, except to mention that it also inhabits the Sula Islands†; and I will therefore proceed now to consider its nearly allied but more widely distributed congener, *Limnaëtus*

* *Vide* Ibis, 1868, p. 13.

† *Vide* Schlegel's 'Valk-Vogels,' pl. 7. fig. 3; also the Marquis of Tweeddale's paper on the Birds of Celebes, in the 'Transactions' of the Zoological Society, vol. viii. p. 34.

caligatus (the *Spizaëtus limnaëtus* of Mr. Sharpe's Catalogue), which is also usually, though not invariably, a crestless species, or with the crest but very slightly developed*.

This Hawk-Eagle occurs under two very distinct phases of plumage, if, indeed, both be really referable to one species: these are the white- or pale-fulvous-headed and white-breasted phase figured at pl. 127 of Temminck's 'Planches Coloriées,' under the name of *Falco niveus*, and the fuliginous or melanistic phase figured at pl. 134 of the same work, and also on pl. 36 of Horsfield's 'Zoological Researches in Java' under that of *Falco limnaëtus*; besides which, specimens occur apparently intermediate between these two extremes of coloration.

All three of the above-mentioned phases are also figured in Schlegel's 'Valk-Vogels,' in which very useful work the pale-headed phase is represented on pl. 6. fig. 2, from Flores†, and on pl. 8. fig. 2, from Java; the intermediate on pl. 6. fig. 3, from Java, and on pl. 7. fig. 1, from Borneo; and the wholly fuliginous on pl. 8. fig. 1, from Java.

Mr. Sharpe describes the latter phase as the adult plumage of the species; but it appears to be certain that it is sometimes assumed from the nest: one of the figures in Schlegel's 'Valk-Vogels' (pl. 8. fig. 3) represents a nestling from Java in which the fuliginous plumage is immediately succeeding the down; this is probably the same specimen which is thus described in the 'Muséum des Pays Bas' (Astures, p. 11):—"No. 30, très-jeune individu retiré du nid, revêtu en partie duvet, en partie de plumes, le duvet blanc, les plumes d'un brun-noir uniforme, Java."

* I have never seen a specimen of either phase of colouring with a crest exceeding an inch in length; but instances of longer crests have been recorded.

† This is the only specimen I am acquainted with from any locality east of Java; Professor Schlegel remarks respecting it ('Valk-Vogels,' p. 55), "il ressemble en général à la variété à teintes claires de Java, mais il a le blanc beaucoup plus pur, tandis que le brun du dos, des ailes, et de la queue est beaucoup plus foncé et presque noir." In the Supplementary Catalogue of the Muséum des Pays Bas (Accipitres, p. 57) the following measurements are given of this specimen—"aile 16 pouces 3 lignes, queue 11 pouces 3 lignes."

Dr. Horsfield, in the article on "*Falco limnaëtus*," in his 'Zoological Researches in Java,' writes thus,—“Both the testimony of the natives and the remarks I personally made on the manners of our bird have fully convinced me that *F. niveus* is a species distinct from *F. limnaëtus*.” The same view was taken by Dr. Bernstein, who also resided for some years in Java, and the substance of whose remarks on this subject, extracted from his article in vol. viii. of the 'Journal für Ornithologie' (pp. 419–425), I here subjoin:—“It is certainly not to be denied that there is not any difference between the measurements of *F. niveus* and *F. limnaëtus*, and that very dusky-coloured individuals of *F. niveus* occur which seem to form the transition from that species to *F. limnaëtus*. Nevertheless, having shot numerous individuals and compared them anatomically, having observed others at the nest, taken the young from it, reared and kept them for years, I cannot do otherwise than express myself against the identity of the two species. I have found the nest of *F. limnaëtus* nine times, and observed the old ones at it; both always belonged to the same species: the young are at first covered with fine white down, between which, here and there, the brown feathers of the perfect plumage begin to appear; and three which I brought up corresponded perfectly with the old ones. The nest of *F. niveus* I found four times; and two of these contained a single half-fledged young bird, both of which I took and reared: in their first plumage the throat was pure white, but with three more or less distinct dusky streaks (which are also perceptible on the throat of *F. limnaëtus*). The breast and abdomen are also white, but with large blackish brown longitudinal spots, whilst the thighs have rather lighter narrow transverse streaks; the feathers of the head and nape are dirty white, assuming a brownish hue towards the tip, and with blackish brown shaft-marks; the feathers of the back and scapulars are grey-brown, darker towards the tip, and lighter, and ultimately white, towards the base; the quill-feathers are brown, with lighter transverse bars, and the rectrices similar but paler: with increasing age the dusky shaft-marks on the head, neck, and breast seem gradually to disappear till these

parts become at length pure white; such pure white birds are much rarer than the variegated ones, and are, from their greater shyness, less easily shot. I obtained two specimens of a darker variety, in which the white on the back and underparts is replaced by a dirty yellow-brown, which is lighter on the throat and belly than on the breast and back; these specimens, however, may be recognized as belonging to *F. niveus* by the very distinct transverse bars on their wings and tail.

“On a minute anatomical comparison of *F. limnaëtus* and *F. niveus* some differences in the structure of the skeleton may be observed, which, however insignificant, enable me to distinguish between the skeletons in my possession. Thus, for example, the space between the processus maxillares of the two bones of the palate is less in *F. limnaëtus* than in *F. niveus*, and in consequence the mussel-shaped apophysis of the palate of the upper mandible-bone contribute more to the formation of the hard palate in the latter than in the former; also in the skull of *F. limnaëtus*, where the outer edge of the palate-bone passes over to the ossa omoïdea, there is on each side a sharp angle or corner, directed outward and backward, whilst in *F. niveus* the outer edge bends gradually into the backward one. All these differences, as well as the general anatomy of these birds, I have described more minutely in a separate article in the sixth volume of the Treatises of the Society of Natural Philosophy of Batavia.”

Mr. Sharpe gives the description of a Sumatran nestling of the paler race in the British Museum, which seems not to differ materially from the Java specimens described by Dr. Bernstein.

Whether the two races are really specifically distinct, or only different in the darker being an hereditary melanism of the paler, and whether the pale birds ever assume a plumage resembling those which are melanistic *ab ovo**, must, I think, remain an open question. Should the two races be admitted

* A fuliginous specimen from Java in the Norwich Museum has some yellowish white feathers scattered about the lower portion of the tarsi, and some wholly fuliginous specimens certainly show more variation of tint than others.

as specifically distinct, the paler must stand as *Limnaëtus caligatus* (Raffles), and the fuliginous as *L. horsfieldi* (Vigors).

The irides in both races are said by Dr. Bernstein to be dusky brown; Dr. Horsfield, however (probably describing an older specimen), speaks of the irides in *L. horsfieldi* as being yellow; those of *L. caligatus* he does not mention.

In a living specimen of *L. caligatus* from Upper Burmah, presented to the Zoological Society of London by Captain H. Feilden, by whom it was taken from the nest near Thayetmyo in May 1871, the colour of the irides and of the plumage was thus noted by me when I saw the bird in November 1874:—"Iris hazel; crest very slight; back dark (blackish brown); breast and abdomen white, with large longitudinal brown marks; transverse bars of a lighter brown on the thighs; tarsi white; upper surface of tail dark brown, with four darker bars besides the terminal one." Captain Feilden was so good as to inform me that up to the date when he last saw it (November 1873) the bird had undergone no change from its nestling-plumage, "except losing the paler edge of the wing- and tail-covert feathers common to all Hawk-Eagles." Between November 1874 and October 1875, when the bird died whilst moulting, the only change which I observed in its plumage was that on the abdomen and flanks the dark brown lanceolate marks had considerably extended in breadth towards the end of each feather, and also over the whole lower part of the feather in some cases, and the greater part of it in others.

The skin of this specimen is now preserved in the Norwich Museum; it proved on dissection to be a male.

Captain Feilden wrote to me that he had frequently shot adult males of this species, which were all very similar and not unlike the specimen presented by him to the Zoological Society, except that the spots on the breast were much fewer and smaller.

I have measured seventeen specimens of *L. caligatus* from Java, Borneo, Malacca, and Nepal*: the largest specimen

* The specimen from Upper Burmah, described above, is not included in these measurements, owing to the imperfect state of its wings.

has the wing 17·2 and the tarsus 4·2 ; in the smallest the wing is 13·5 and the tarsus is 3·3 inches.

I have also measured eight specimens of *L. horsfieldi* from Java, Borneo, and Malacca : in the largest of these the wing measures 17 and the tarsus 4 ; in another specimen the wing measures 16·4 and the tarsus 4·5 ; in the smallest of the eight the wing is 15·4 and the tarsus 3·6 inches.

In neither race does there appear to be any constant difference in size between specimens from different localities*.

I have been indebted to the kindness of the Marquis of Tweeddale for an opportunity of examining a specimen in his collection of the Hawk-Eagle inhabiting the Andaman Islands, *L. andamanensis* (Tytler), which appears to differ but little, except in its smaller dimensions, from *L. caligatus* as distinguished from *L. horsfieldi*. The colour of the iris in this species appears to be "reddish brown"† in some specimens, and "deep yellow"‡ or "amber"§ in others.

Since the publication of Mr. Sharpe's volume notices of this species have appeared in 'The Ibis' for 1874, p. 127, also in 'Stray Feathers' for 1874, p. 142, and for 1876, p. 280, which should be consulted for further information respecting it.

I propose now to refer to a Hawk-Eagle which I believe to be exclusively Indian, *Limnaëtus cirrhatus*, respecting the geographical distribution of which Mr. Hume has the following remark in 'Stray Feathers,' vol. iii. p. 46 :—"It is a Peninsular species ; and a line drawn from Aboo to Etawah, and thence by Shergotty to Calcutta, indicates very fairly its northern limits."

Mr. Sharpe records two immature specimens from Nepal

* Since writing the above I have received No. 1 of vol. v. of 'Stray Feathers,' which contains at p. 9 an important note on *Limnaëtus caligatus*, that should by all means be consulted, especially as showing the great rarity of the fuliginous bird (*L. horsfieldi*) in India, which, considering its comparative abundance in Malacca and Java, is, I think, an argument in favour of its specific distinctness from *L. caligatus*.

† Vide Hume's 'Rough Notes,' vol. i. p. 205.

‡ Vide 'Stray Feathers,' 1874, p. 142.

§ Vide Ibis, 1874, p. 127.

as existing in the British Museum, which I recently had an opportunity of examining, and respecting which I came to the conclusion that they were both referable to *L. caligatus*.

L. cirrhatus appears chiefly to differ from *L. caligatus* in possessing an elongated occipital crest, which varies much in length, but, I believe, is never entirely absent, except, perhaps, very rarely in moulting specimens.

So far as I know, *L. cirrhatus* is not subject to melanism.

In 'Stray Feathers,' vol. iv. p. 356, Mr. Hume gives an account of the changes of plumage and colouring incident to this Hawk-Eagle in its progress to maturity. These changes appear to occur almost entirely in the reverse order to those observed by Dr. Bernstein in the case of Javan specimens of *L. caligatus*—a difference which, should it prove constant, will strongly confirm the entire distinctness of the two species; I suspect, however, that the changes through which *L. caligatus* passes will prove somewhat variable, and that the differences between it and *L. cirrhatus* in this respect will not prove altogether constant. The plumage of a Sumatran nestling of *L. caligatus*, which is preserved in the British Museum and described in Mr. Sharpe's volume, appears to indicate that such is the fact.

I have not had an opportunity of examining many examples of the Indian *L. cirrhatus*; but of four, respecting which I have preserved memoranda, the largest measured 17·4 inches in the wing and 4·5 in the tarsus, the smallest 16·3 in the wing and 3·5 in the tarsus.

Limnaëtus ceylonensis (*Falco ceylonensis* of Gmelin), the ordinary Hawk-Eagle of Ceylon, which Mr. Sharpe identifies with *L. cirrhatus*, is a decidedly smaller bird; I have measured ten Ceylonese specimens, of which the largest had the wing 15·2 inches in length from the carpal joint, and the tarsus 3·6, and the smallest had the wing 14 inches and the tarsus 3·4.

Judging from the specimens which I have seen, I should say that the ordinary plumage of *L. ceylonensis* varies but little, and much resembles the first dress of *L. cirrhatus* as described by Mr. Hume in 'Stray Feathers,' vol. iv. p. 356.

Mr. Layard, in his papers on the ornithology of Ceylon, published in the 'Annals of Natural History' for 1851, refers to the ordinary Hawk-Eagle of that island* under the title of "*Spizaetus limnaetus*, Horsf.," and appends to his account of it the following remark:—"There is a singularly dark variety of this species which I have only seen at Port Pedro, and that but very rarely." The only Ceylonese specimen which I have seen that could at all be called a "dark variety," is a living one recently presented by Captain W. V. Legge to the Zoological Society of London. This bird much resembles in plumage that of Captain Feilden's Thayetmyo specimen of *L. caligatus*, which I have already described; but it seemed to me to be decidedly smaller, and it has an occipital crest which, though not now much elongated, is slender and well defined; the irides in this specimen are a pale greyish straw-colour. I understand that it is now five years old, and was taken from the nest near Point de Galle by Captain Legge, who informs me that he intends to favour the readers of 'The Ibis' with some notes on the changes of plumage which it has undergone, and on those of the Ceylon *Spizaeti* generally. I understand from Captain Legge that the colour of the iris in this specimen is that usual to the young bird of both the paler and the darker phases of plumage, and that both these have a yellow iris when adult, which this individual has probably not acquired in consequence of having been kept in captivity.

Mr. Hume's description of his *L. sphynx*, from Travancore†, seems to me to be probably referable to a specimen of *L. ceylonensis* intermediate in coloration between the ordinary pale-chested Ceylon bird and the darker plumage exhibited in the specimen lately presented by Captain Legge to the Zoological Society.

I propose now to refer to *Limnaetus nipalensis*, respecting which I have to remark that Japan and Formosa should be added to the localities quoted for this species by Mr. Sharpe.

* One of Mr. Layard's Ceylon specimens is preserved in the Norwich Museum.

† Vide 'Stray Feathers,' vol. i. p. 321.

Specimens from both Formosa and Japan are preserved in the Norwich Museum; and the only figure of this fine species yet published is, I believe, that of a Japanese specimen, not fully adult, which is given on pl. 3 of the 'Fauna Japonica.' *L. nipalensis* has thus a more northern range than any other species of the genus.

I may here mention that by an accidental error the description of a nestling of *Spilornis cheela*, preserved in the British Museum, has been inserted at p. 267 of Mr. Sharpe's volume as that of a nestling of *Limnaëtus nipalensis*. The tarsi in this very young specimen are greatly decayed, which probably led to this mistake.

It is remarkable, as has been already pointed out by the Marquis of Tweeddale*, that the peculiarity which appears in this, the largest of the *Limnaëti*, of the tarsal feathering extending onto the first joint of the middle toe, is shared by only one other species, and that the smallest of the genus, *L. alboniger*, respecting which I have nothing further to add to Mr. Sharpe's account, except to observe that the white tip to the crest in the adult plumage is not a constant character, and also that the Hawk-Eagle from Java, figured in Schlegel's 'Valk-Vogels,' pl. 6. fig. 1, appears to me to be probably an immature example of this species, judging from this figure and from the measurements of the bird quoted in the 'Muséum des Pays-Bas,' Astures, p. 11.

Another of the smaller eastern *Limnaëti* is *L. philippensis*, which appears to be confined to the Philippine Islands. This species is well figured in the Marquis of Tweeddale's valuable paper on the Birds of the Philippine Archipelago† from an adult specimen in the Norwich Museum; a slightly younger bird in the same collection is somewhat paler, especially about the head, and is less distinctly barred on the lower part of the tarsi.

There is but one other eastern Hawk-Eagle, *L. kieneri*, which Mr. Sharpe makes the type of his genus *Lophotriorchis*. This bird certainly differs, in the character of its coloration, both

* *Vide* Ibis, 1874, p. 128.

† *Vide* 'Transactions of the Zoological Society,' vol. ix. pl. 24.

when immature and when adult, from the other eastern *Limnaëti*; and it also has a somewhat less development of the tail; I doubt, however, as I have already mentioned, its being really generically separable from the genus *Limnaëtus*.

The immature plumage of this Hawk-Eagle will be found described in the addenda to Mr. Sharpe's volume at p. 458.

To the localities quoted by Mr. Sharpe for this species, Batchian, Java, and Ceylon must be added, a specimen from each of these islands being preserved in the Norwich Museum. In 'Stray Feathers,' vol. v. p. 10, Mr. Hume records this species from N.E. Cachar, and adds that "in N.E. India, as In Sikkim, for instance, it is far from uncommon;" it is, however, a decidedly rare species in European Museums.

Mr. Sharpe associates with *L. kieneri*, in his genus *Lophotriorchis*, *L. isidori* of N.W. South America, a much larger species, of similar colouring, both in its first and last stages of plumage, but with a more largely developed tail.

Through the kindness of Dr. A. Dubois, I had the opportunity, last year, of examining, at the Royal Museum of Natural History at Brussels, the two type specimens of "*Spiæëtus devillii*," figured and described by that gentleman in the 'Bulletins de l'Académie Royal de Belgique,' 2nd series, vol. xxxviii. pts. 1 & 2, and found them to be immature examples of *L. isidori*—that figured by Dr. Dubois on pl. 1 as "*S. devillii*, adult," being the first year's plumage of *L. isidori*, and that represented on pl. 2 as "*S. devillii*, jeune," being a very curious stage, intermediate between the first dress of *L. isidori* and the fully adult plumage figured by Des Murs in the 'Iconographie Ornithologique,' pl. 1.

Neither of these immature stages are described by Mr. Sharpe; but they may be readily recognized by a reference to the figures and descriptions supplied by Dr. Dubois.

The Norwich Museum contains a specimen of *L. isidori* in its first, and also one in its last stage of plumage; but I have never seen the intermediate dress, except at Brussels. It is worthy of note that this intermediate dress has no corresponding phase, so far as I am aware, in *L. kieneri*.

The two specimens of this rare species preserved in the

Brussels Museum are from Baiza, in Ecuador; those in the Norwich Museum are, like the type specimen figured by Des Murs, from New Granada; and an adult example in the collection of Messrs. Salvin and Godman is from the neighbourhood of Medellin, in the Columbian province of Antioquia.

Of the Hawk-Eagles with feathered tarsi there remain but three to notice, those to which I propose to restrict the generic name *Spizaëtus*, viz. *S. ornatus* and *S. tyrannus* of Tropical America, and *S. coronatus* of Africa. These three species exhibit to a still greater extent than those of the genus *Limnaëtus* the short wings and largely developed tails which are more or less conspicuous in the large majority of the group which I would (as already mentioned) designate under the title of *Thrasaëtinae*. All these three Hawk-Eagles have a yellow iris when adult; but it is of a brighter and deeper yellow in the two American species than in their African congener.

With regard to the two first-named species, I have nothing to add to Mr. Sharpe's account, except to remark with reference to the definition of the principal colour of the adult of *S. tyrannus* as "black above and below," that a specimen now living in the Gardens of the Zoological Society exhibited, when it first acquired its adult dress, a decided slaty tinge on the black portions of the plumage, and especially on the head and underparts, which probably disappears as the feathers become worn, and in specimens which have been long preserved.

Mr. Sharpe defines the habitat of *S. coronatus* as "South and West Africa," and in his edition of Layard's 'Birds of South Africa,' p. 39, gives Senegal as its north-west and Natal as its north-eastern limit, so far as has at present been ascertained. It is curious that this noble species has not yet been recognized further to the northward in East Africa; but such is, I believe, the fact.

Spizaëtus coronatus bears a remarkable resemblance in its general conformation to the Great Harpy Eagle of Tropical America (*Thrasaëtus harpyia*); but the latter differs from it

and from the other Hawk-Eagles to which I have hitherto referred, in having its extraordinarily powerful tarsi scutellated instead of feathered—a peculiarity which it shares with the remaining species of this group.

I have nothing to add to Mr. Sharpe's account of the Harpy Eagle, except to suggest a doubt as to whether the young bird described by him may not have made some progress towards the assumption of adult dress. I have a strong impression that I have seen young birds of this species with much less black about them than that described by Mr. Sharpe; but I am not able at the present moment to refer to such a specimen, or to give the description of such a one in detail, and I will therefore pass to an allied species from Tropical America, *Morphnus guianensis*, which appears, from its elongated tarsi and short toes, to lead naturally to the next group which I shall have to notice, the *Circaëtinae*, or Harrier-Eagles.

As Mr. Sharpe does not describe the immature plumage of *M. guianensis*, I add the following particulars, which I noted from an immature specimen in the Brussels Museum:—Entire head, back of neck, and crest pure white; entire mantle very pale brownish grey, finely vermiculated with darker markings of the same; these on the scapulars assume the form of six irregular transverse bars, and of three similar bars on the primary coverts; lower back and upper tail-coverts pure white; bastard wing blackish slate-colour, with two transverse bars and a tip of pale mottled brownish grey; primaries with four to five such bars (the uppermost partly white) and a light tip; the secondaries and tertials with similar bars and a broad pale tip; tail with ten dark transverse bars, between which are narrow interspaces mottled with two shades of brownish grey, tip of tail whitish; similar bars are apparent on the under surface of the tail; entire remainder of the under surface of the bird pure white.

Before concluding my remarks on the *Thrasaëtinae*, I must allude to two large birds of prey (*Harpyopsis novæ-guinæe* and *Megatriorchis doriæ*) recently discovered in New Guinea by Signor D'Albertis, which I have not seen, but which, I think,

most probably belong to the Hawk-Eagles, judging from the description of them contributed in November 1875 by Count T. Salvadori to the seventh volume of the 'Annali del Mus. Civ. di St. Nat. di Genova.'

As but few English ornithologists possess the work containing these descriptions, it may not be improper here to reproduce them :—

"Gen. nov. *Harpyopsis*: genus novum ex subfamilia Accipitrinarum, rostro robustissimo, valde alto et adunco; naribus oblongis, verticalibus; loris et regione circumocu lari fere nudis, rare pilosis; alis brevissimis, valde rotundatis, remigibus primariis paulo longioribus quam secundariis; cauda longissima, rotundata; tarsi mediocribus, robustis, scutis latis transversis antice et postice obtectis, tertio superiore antice plumosis; digitis mediocribus, externo paulo longiore quam interno, medio longiusculo; unguibus permagnis, validissimis, inferne sulcatis; plumis cervicis copiosis, longiusculis, latis, apice rotundatis.

"*H. novæ-guinæ*. Supra fusco-brunnea, plumarum limbo apicali albido; subtus sordide alba, jugulo et pectore summo sordide griseo-tinctis; alis supra dorso concoloribus; remigibus fusco-brunneis, fasciis transversis latis obscurioribus, sed parum conspicuis notatis, fascia apicali latiore, pogonio interno remigum albo-marmorato, remigibus subtus magna ex parte albo- et griseo-marmoratis, parte apicali grisea fusco transfasciata, apice ipso late fusco; cauda supra dorso concolore, fasciis sex obscurioribus undulatis parum conspicuis notata, fascia apicali latiore, limbo apicali rectricum albido; cauda subtus grisea, albido marmorata, fasciis tribus tantum fuscis notata, fascia apicali latiore, rectricibus rachidibus supra fuscis, subtus partim albis, partim fuscis; rostro plumbeo fere nigro, pedibus griseis, iride obscure flava.

"Long. tot. 0^m·870, al. 0^m·480, caud. 0^m·410, rostri culm. 0^m·058, rostri hiat. 0^m·058, rostri alt. 0^m·036, tarsi 0^m·144, digiti med. cum ungue 0^m·094, ung. post. 0^m·045.

"*Megatriorchis*, gen. nov. *Megatriorchis* novum genus ex subfamilia Accipitrinarum, alis brevissimis, remigibus primariis paulo brevioribus quam secundariis; cauda longissima,

rotundata, tarsi mediocribus, robustis, antice et postice scutis transversalibus obtectis, digitis validis, interno brevior quam externo, unguibus digiti interni et posterioris validissimis.

“*Megatriorchis doriæ*, fem. Plumis pilei et cervicis nigris, rufescente marginatis, plumis cervicis partim albo-marginatis dorso, uropygio et supracaudalibus fusco-nigris, fasciis transversis fusco-griseo-rufescentibus ornatis, plumarum marginibus apicalibus griseo-rufescentibus; genis et fascia laterali occipitis utrinque albis, longitudinaliter fusco-lineatis; plumis auricularibus postice fusco-nigris, fasciam postocularem latam nigram constituentibus; subtus albus, maculis longitudinalibus fuscis ornatus, gulæ et subcaudalium maculis linearibus striatis, pectoris summi et imi latis brunneo-nigris, pectoris medii valde pallidioribus, sed linea scapuli nigra: remigibus et rectricibus supra fasciis alternis fusco-nigris et fusco-griseis notatis, subtus griseis fusco transfasciatis, caudæ limbo apicali griseo, caudæ fasciis supra 24; rostro nigro, ceromate cinereo; iride castanea; pedibus cinereis, pallidis.

“Long. tot. circa 0^m·680, al. 0^m·350, caud. 0^m·320, rostri culm. 0^m·038, rostri hiat. 0^m·038, tarsi 0^m·090, digit med. cum ungue 0^m·074, ung. dig. post. 0^m·036.”

It appears that one specimen of each of these remarkable Raptores was procured on Yule Island, on the south coast of New Guinea, and that one other example of *Harpyopsis novæ-guinæ* has been obtained at the foot of Mount Arfak.

[To be continued.]

XXXVIII.—*Description of two new Ant-birds of the Genus Grallaria, with a List of the known Species of the Genus.*

By P. L. SELATER, M.A., F.R.S.

(Plates VIII., IX.)

WHILE introducing to science a fine new Ant-bird of the genus *Grallaria*, recently discovered by Mr. T. K. Salmon in Antioquia, together with another apparently unrecognized form of the genus, I take the opportunity of giving a complete list of the species of this group, to which many important addi-